

Claims

1. A substation control system, responsive to a plurality of inputs from power system assemblies in the substation, comprising:

at least one remote input/output module having a fiber-optic transceiver capability;

wire connections, for providing status indications from selected status points in the power system assemblies, to input contacts of the input/output module, wherein output signals from the remote fiber-optic module are in a form which can be applied to a fiber-optic line;

at least one logic processor connected to a fiber-optic line from the input-output module and responsive to signals thereon for communication thereof to protective relay devices;

a fiber-optic communication line connecting the remote input/output module and the logic processor; and

at least one protective relay responsive to signals from the logic processor to perform protection functions and to produce corresponding control output signals, wherein the control output signals are applied back to the power system assemblies for control thereof.

2. The system of claim 1, wherein the logic processor is located in the control house at the substation and wherein the fiber-optic line covers most of the distance between the power system equipment and the logic processor.

3. The system of claim 1, wherein the system includes a plurality of remote input-output modules, a plurality of logic processors, and a plurality of protective relays, wherein each logic processor receives signals from a plurality of input-output modules, and wherein each logic processor provides information to a plurality of protective relays.

4. The system of claim 1, wherein the output signals from the protective relay are also provided back to the logic processor.

5. The system of claim 1, wherein the system includes two identical substation control systems, both responsive to said status indications from the power system equipment assemblies, connected and operating redundantly in said substation control system.

6. The system of claim 5, including means for comparing the operation of said two substation control systems and for providing an alarm if the two systems do not agree.

✓ 7. The system of claim 11, wherein communication over the fiber-optic line between the remote I/O and the logic processor and between the logic processor and each device with which it communicates is in the form of digital bits, suitable for communication over a fiber-optic line.

8. The system of claim 1, wherein a single status indication is provided to the logic processor from each status point in the power system assemblies and wherein the logic processor provides said status indications to multiple selected relay circuits for carrying out protection functions.